

## SEQUENCE LISTING

OIPE 14P38  
JUL 10 2007  
PATENT & TRADEMARK OFFICE  
<110> DIDEBERG, OTTO  
VERNET, THIERRY  
MOUZ, NICOLAS

<1520> STREPTOCOCCUS PNEUMONIAE PBP2X MINI-PROTEIN AND USES  
THEREOF

<130> 70457-19

<140> 10/520,655  
<141> 2005-03-07

<150> PCT/IB03/003397  
<151> 2003-07-11

<150> FR 02/08724  
<151> 2002-07-11

<160> 18

<170> PatentIn Ver. 3.3

<210> 1  
<211> 551  
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<213> Artificial Sequence

<220>  
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mini-PBP2x construct

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Ile Ala Glu Asp Ala Thr Ser Gly Gly Pro Asn Arg Ser Tyr Pro Asn  
20 25 30

Gly Gln Phe Ala Ser Ser Phe Ile Gly Gly Met Glu Ser Ser Leu  
35 40 45

Asn Ser Ile Leu Ala Gly Gly Asp Gly Lys Asp Val Tyr Thr  
50 55 60

Thr Ile Ser Ser Pro Leu Gln Ser Phe Met Glu Thr Gln Met Asp Ala  
65 70 75 80

Phe Gln Glu Lys Val Lys Gly Lys Tyr Met Thr Ala Thr Leu Val Ser  
85 90 95

Ala Lys Thr Gly Glu Ile Leu Ala Thr Thr Gln Arg Pro Thr Phe Asp  
100 105 110

Ala Asp Thr Lys Glu Gly Ile Thr Glu Asp Phe Val Trp Arg Asp Ile  
115 120 125

Leu Tyr Gln Ser Asn Tyr Glu Pro Gly Ser Thr Met Lys Val Met Met  
 130 135 140  
 Leu Ala Ala Ala Ile Asp Asn Asn Thr Phe Pro Gly Gly Glu Val Phe  
 145 150 155 160  
 Asn Ser Ser Glu Leu Lys Ile Ala Asp Ala Thr Ile Arg Asp Trp Asp  
 165 170 175  
 Val Asn Glu Gly Leu Thr Gly Gly Arg Met Met Thr Phe Ser Gln Gly  
 180 185 190  
 Phe Ala His Ser Ser Asn Val Gly Met Thr Leu Leu Glu Gln Lys Met  
 195 200 205  
 Gly Asp Ala Thr Trp Leu Asp Tyr Leu Asn Arg Phe Lys Phe Gly Val  
 210 215 220  
 Pro Thr Arg Phe Gly Leu Thr Asp Glu Tyr Ala Gly Gln Leu Pro Ala  
 225 230 235 240  
 Asp Asn Ile Val Asn Ile Ala Gln Ser Ser Phe Gly Gln Gly Ile Ser  
 245 250 255  
 Val Thr Gln Thr Gln Met Ile Arg Ala Phe Thr Ala Ile Ala Asn Asp  
 260 265 270  
 Gly Val Met Leu Glu Pro Lys Phe Ile Ser Ala Ile Tyr Asp Pro Asn  
 275 280 285  
 Asp Gln Thr Ala Arg Lys Ser Gln Lys Glu Ile Val Gly Asn Pro Val  
 290 295 300  
 Ser Lys Asp Ala Ala Ser Leu Thr Arg Thr Asn Met Val Leu Val Gly  
 305 310 315 320  
 Thr Asp Pro Val Tyr Gly Thr Met Tyr Asn His Ser Thr Gly Lys Pro  
 325 330 335  
 Thr Val Thr Val Pro Gly Gln Asn Val Ala Leu Lys Ser Gly Thr Ala  
 340 345 350  
 Gln Ile Ala Asp Glu Lys Asn Gly Gly Tyr Leu Val Gly Leu Thr Asp  
 355 360 365  
 Tyr Ile Phe Ser Ala Val Ser Met Ser Pro Ala Glu Asn Pro Asp Phe  
 370 375 380  
 Ile Leu Tyr Val Thr Val Gln Gln Pro Glu His Tyr Ser Gly Ile Gln  
 385 390 395 400  
 Leu Gly Glu Phe Ala Asn Pro Ile Leu Glu Arg Ala Ser Ala Met Lys  
 405 410 415  
 Asp Ser Leu Asn Leu Gln Thr Thr Ala Lys Ala Leu Glu Gln Val Ser  
 420 425 430

Gln Gln Ser Pro Tyr Pro Met Pro Ser Val Lys Asp Ile Ser Pro Gly  
 435 440 445  
 Asp Leu Ala Glu Glu Leu Arg Arg Asn Leu Val Gln Pro Ile Val Val  
 450 455 460  
 Gly Thr Gly Thr Lys Ile Lys Asn Ser Ser Ala Glu Glu Gly Lys Asn  
 465 470 475 480  
 Leu Ala Pro Asn Gln Gln Val Leu Ile Leu Ser Asp Lys Ala Glu Glu  
 485 490 495  
 Val Pro Asp Met Tyr Gly Trp Thr Lys Glu Thr Ala Glu Thr Leu Ala  
 500 505 510  
 Lys Trp Leu Asn Ile Glu Leu Glu Phe Gln Gly Ser Gly Ser Thr Val  
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<210> 2
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<220>
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<220>
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<220>
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<222> (6)
<223> Asp or Ser

<220>
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<210> 12
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<210> 13
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<220>
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<400> 13
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<210> 14
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<220>
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<210> 15
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<220>
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<400> 15
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<220>  
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<400> 16  
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<210> 17  
<211> 7  
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<220>  
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<400> 17  
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<210> 18  
<211> 750  
<212> PRT  
<213> Streptococcus pneumoniae

<400> 18  
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Ser	Val	Phe	Val	Phe	Ala	Ile	Phe	Leu	Val	Asn	Phe	Ala	Val	Ile	Ile
					35				40				45		
Gly	Thr	Gly	Thr	Arg	Phe	Gly	Thr	Asp	Leu	Ala	Lys	Glu	Ala	Lys	Lys
					50			55			60				
Val	His	Gln	Thr	Thr	Arg	Thr	Val	Pro	Ala	Lys	Arg	Gly	Thr	Ile	Tyr
					65			70			75			80	
Asp	Arg	Asn	Gly	Val	Pro	Ile	Ala	Glu	Asp	Ala	Thr	Ser	Tyr	Asn	Val
					85				90				95		
Tyr	Ala	Val	Ile	Asp	Glu	Asn	Tyr	Lys	Ser	Ala	Thr	Gly	Lys	Ile	Leu
					100				105				110		
Tyr	Val	Glu	Lys	Thr	Gln	Phe	Asn	Lys	Val	Ala	Glu	Val	Phe	His	Lys
					115			120					125		
Tyr	Leu	Asp	Met	Glu	Glu	Ser	Tyr	Val	Arg	Glu	Gln	Leu	Ser	Gln	Pro
					130			135			140				
Asn	Leu	Lys	Gln	Val	Ser	Phe	Gly	Ala	Lys	Gly	Asn	Gly	Ile	Thr	Tyr
					145			150			155			160	
Ala	Asn	Met	Met	Ser	Ile	Lys	Lys	Glu	Leu	Glu	Ala	Ala	Glu	Val	Lys
					165				170				175		
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Ser	Ile	Leu	Ala	Gly	Thr	Asp	Gly	Ile	Ile	Thr	Tyr	Glu	Lys	Asp	Arg
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Leu	Gly	Asn	Ile	Val	Pro	Gly	Thr	Glu	Gln	Val	Ser	Gln	Arg	Thr	Met
					245				250				255		
Asp	Gly	Lys	Asp	Val	Tyr	Thr	Thr	Ile	Ser	Ser	Pro	Leu	Gln	Ser	Phe
					260				265				270		
Met	Glu	Thr	Gln	Met	Asp	Ala	Phe	Gln	Glu	Lys	Val	Lys	Gly	Lys	Tyr
					275				280				285		
Met	Thr	Ala	Thr	Leu	Val	Ser	Ala	Lys	Thr	Gly	Glu	Ile	Leu	Ala	Thr
					290				295			300			
Thr	Gln	Arg	Pro	Thr	Phe	Asp	Ala	Asp	Thr	Lys	Glu	Gly	Ile	Thr	Glu
					305			310			315			320	

Asp Phe Val Trp Arg Asp Ile Leu Tyr Gln Ser Asn Tyr Glu Pro Gly  
 325 330 335  
 Ser Thr Met Lys Val Met Met Leu Ala Ala Ala Ile Asp Asn Asn Thr  
 340 345 350  
 Phe Pro Gly Gly Glu Val Phe Asn Ser Ser Glu Leu Lys Ile Ala Asp  
 355 360 365  
 Ala Thr Ile Arg Asp Trp Asp Val Asn Glu Gly Leu Thr Gly Gly Arg  
 370 375 380  
 Met Met Thr Phe Ser Gln Gly Phe Ala His Ser Ser Asn Val Gly Met  
 385 390 395 400  
 Thr Leu Leu Glu Gln Lys Met Gly Asp Ala Thr Trp Leu Asp Tyr Leu  
 405 410 415  
 Asn Arg Phe Lys Phe Gly Val Pro Thr Arg Phe Gly Leu Thr Asp Glu  
 420 425 430  
 Tyr Ala Gly Gln Leu Pro Ala Asp Asn Ile Val Asn Ile Ala Gln Ser  
 435 440 445  
 Ser Phe Gly Gln Gly Ile Ser Val Thr Gln Thr Gln Met Ile Arg Ala  
 450 455 460  
 Phe Thr Ala Ile Ala Asn Asp Gly Val Met Leu Glu Pro Lys Phe Ile  
 465 470 475 480  
 Ser Ala Ile Tyr Asp Pro Asn Asp Gln Thr Ala Arg Lys Ser Gln Lys  
 485 490 495  
 Glu Ile Val Gly Asn Pro Val Ser Lys Asp Ala Ala Ser Leu Thr Arg  
 500 505 510  
 Thr Asn Met Val Leu Val Gly Thr Asp Pro Val Tyr Gly Thr Met Tyr  
 515 520 525  
 Asn His Ser Thr Gly Lys Pro Thr Val Thr Val Pro Gly Gln Asn Val  
 530 535 540  
 Ala Leu Lys Ser Gly Thr Ala Gln Ile Ala Asp Glu Lys Asn Gly Gly  
 545 550 555 560  
 Tyr Leu Val Gly Leu Thr Asp Tyr Ile Phe Ser Ala Val Ser Met Ser  
 565 570 575  
 Pro Ala Glu Asn Pro Asp Phe Ile Leu Tyr Val Thr Val Gln Gln Pro  
 580 585 590  
 Glu His Tyr Ser Gly Ile Gln Leu Gly Glu Phe Ala Asn Pro Ile Leu  
 595 600 605  
 Glu Arg Ala Ser Ala Met Lys Asp Ser Leu Asn Leu Gln Thr Thr Ala  
 610 615 620

Lys Ala Leu Glu Gln Val Ser Gln Gln Ser Pro Tyr Pro Met Pro Ser  
625 630 635 640

Val Lys Asp Ile Ser Pro Gly Asp Leu Ala Glu Glu Leu Arg Arg Asn  
645 650 655

Leu Val Gln Pro Ile Val Val Gly Thr Gly Thr Lys Ile Lys Asn Ser  
660 665 670

Ser Ala Glu Glu Gly Lys Asn Leu Ala Pro Asn Gln Gln Val Leu Ile  
675 680 685

Leu Ser Asp Lys Ala Glu Glu Val Pro Asp Met Tyr Gly Trp Thr Lys  
690 695 700

Glu Thr Ala Glu Thr Leu Ala Lys Trp Leu Asn Ile Glu Leu Glu Phe  
705 710 715 720

Gln Gly Ser Gly Ser Thr Val Gln Lys Gln Asp Val Arg Ala Asn Thr  
725 730 735

Ala Ile Lys Asp Ile Lys Lys Ile Thr Leu Thr Leu Gly Asp  
740 745 750